

The Crocinae of southern Africa (Neuroptera: Nemopteridae). 2. The genus *Concroce* Tjeder

by

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The genus *Concroce* is revised. One new species, *C. parva*, and its egg and larva, as well as the eggs and larvae of *C. capensis* Tjeder and *C. walkeri* Tjeder, are described. *Concroce hessei* Tjeder is synonymized with *C. capensis*.

INTRODUCTION

This paper concerns the genus *Concroce* and is the second in a series revising the southern African Crocinae (Neuroptera: Nemopteridae). The first dealt with the genera *Laurhervasia* Navas and *Thysanocroce* Withycombe, and provided a general introduction to the series (Mansell 1980).

The genus *Concroce* comprises three known species, one of which is described for the first time. The larvae and eggs (described below) of all three species have been discovered and correlated with the adults.

CONCROCE Tjeder

Concroce Tjeder, 1967: 338; Hölzel, 1975: 91; Mansell, 1977: 202.

Type-species: *Concroce hessei* Tjeder, 1967 (by original designation).

The adult characters of the genus *Concroce* were described by Tjeder (1967). The larvae are characterized by a short prothorax (less than twice the head length), short legs and an almost quadrate head. They are not cave-dwellers but live in plant detritus under rock overhangs and in crevices. The eggs of the three species are known: they are oval, with characteristic mushroom-shaped aeropyles and a sponge-like structure over the micropyle (figs 4 & 7).

Concroce capensis Tjeder, figs 1, 2, 4, 5

Concroce capensis Tjeder, 1967: 314; Hölzel, 1975: 91; Mansell, 1977: 202.

Concroce hessei Tjeder, 1967: 339; Hölzel, 1975: 91. **syn. nov.**

ADULTS (fig. 1A-G). Male as described by Tjeder (1967), and female as described under the name *C. hessei* by Tjeder (1967), with the following additional

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data. Size (mean measurements in mm for 35 specimens, ranges in brackets): length of body 6,6 (5,8-7,4); length of forewing 11,0 (10,5-12,0); length of hindwing 31,0 (26,0-35,0); length of antenna 3,1 (3,0-3,6); length of rostrum 1,1 (1,00-1,28).

Wings with two crossveins between R and M before Rs (occasionally 1 or 3) and 6 or 7 radial crossveins between R and Rs before the hypostigmatic cell. Of 70 wings examined, the first branch of the radial sector arises opposite the cell between the first and second radial crossveins in 32% of wings, between the second and third in 60%, between the third and fourth in 6%, and before the first radial crossvein in 2%.

Coloration of head and thorax as described by Tjeder (1967) but variable, especially on thorax. However, the four marks on the head (Tjeder 1967, fig. 2014), and the broad lateral thoracic stripe were present in all specimens examined.

On the abdomen of the male (fig. 1A-G) sternite 9 short but with long posterior projection curving upwards and slightly towards the right of the insect and terminating in four slender subequal finger-like projections (fig. 1F). Gonarcus slender with acute arcessus and two large triangular flanges in the position of the entoprocesses. Parameres slender, with asymmetrical distal lobes, the left lobe being larger than the right (fig. 1B-E); left lobe with two chitinous projections forming a semicircle, supporting a membranous sac. Right lobe terminating in a weak hook, supporting a small membranous sac. Distal lobes of parameres closely adpressed to one another but not fused. Proximal projections on parameres lacking. The male genitalia are very small, with parameres between 0,58 and 0,72 mm in length.

LARVA (fig. 2, Table 1). Characterized by short prothorax, quadrate head, dark mottled appearance and short stout legs.

TABLE 1. Mean measurements (mm) for *C. capensis* larvae (ranges are given below the means).

	1st Instar	2nd Instar	3rd Instar
Number of larvae measured	2	6	43
Head width	0,36 0,36	0,55 0,52-0,60	0,86 0,80-0,92
Head length	0,32 0,32	0,44 0,44	0,67 0,60-0,72
Mandible length	0,44 0,44	0,63 0,60-0,68	1,00 0,92-1,08
Prothoracic length	0,36 0,36	0,59 0,56-0,68	0,97 0,88-1,08
Body width*	0,46 0,32-0,60	1,13 0,88-1,40	1,92 1,28-2,80
Body length*	2,30 2,24-2,36	3,44 2,88-4,24	5,53 4,56-6,96

*Variable, depending upon feeding and state of maturity within instar.

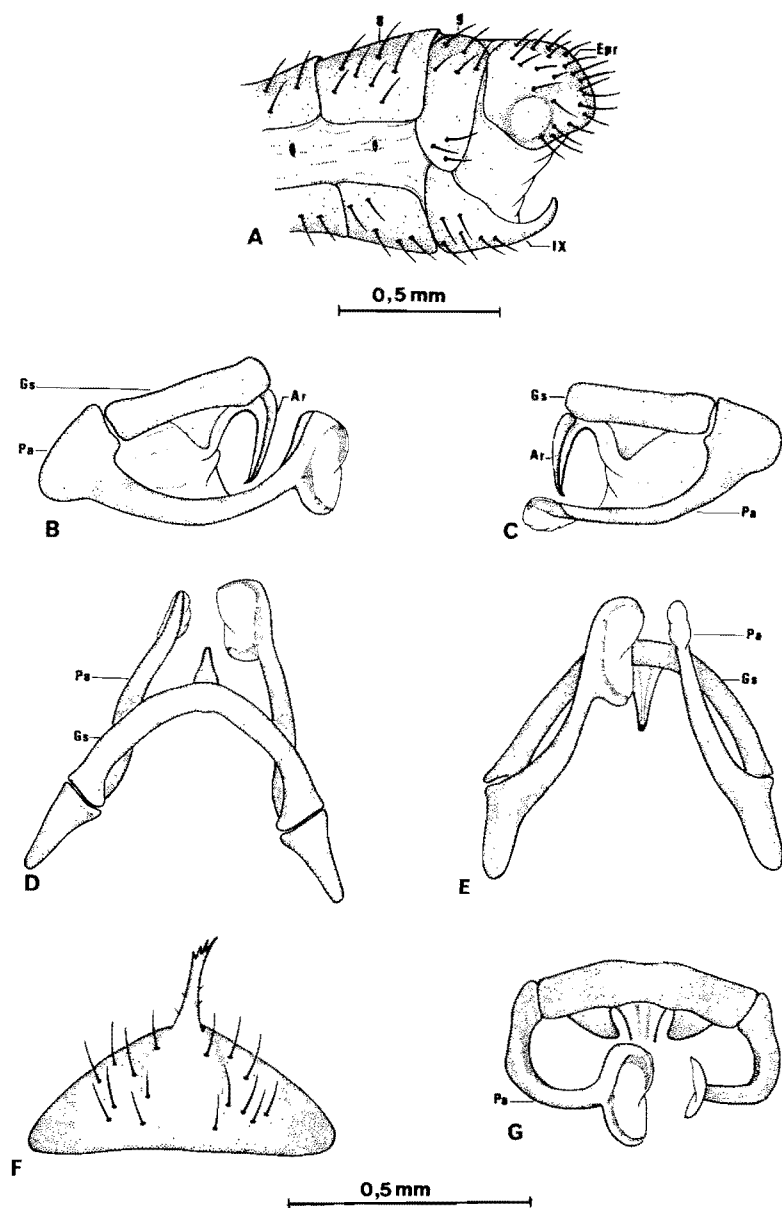


Fig. 1A-G. *Concroce capensis* Tjeder. A. Apex of abdomen ♂. B. Gonarcus and left paramere. C. Gonarcus and right paramere. D. Gonarcus and parameres, dorsal view. E. Gonarcus and parameres, ventral view. F. Sternite 9. G. Gonarcus and parameres, posterior view. Ar - arcus; Epr - ectoproct; Gs - gonarcus; Pa - paramere, IX - sternite 9; 8, 9 - tergites.

Head quadrate, wider than long, almost square in the occipital region. Surface covered with prominent dolichaster-bearing papillae, interspersed with smaller papillae, imparting a granulated appearance to the head. Head of third-instar larva brown, with three pale patches, one on dorsal midline and one on either side of tentorial pits. Second-instar larva with uniformly pale brown head, first-instar larva with pale yellowish-brown head; Y-shaped epicranial sutures present on heads of first and second-instar larvae. Eyes each comprising seven stemmata, one anterior, four posterior to this, followed by a further row of two with prominent dolichaster-bearing papillae situated between the stemmata. Antennae each consisting of a stout dark brown pedicel supporting a delicate nine-segmented flagellum. Proximal and distal flagellomeres long, intermediate seven short, with apical flagellomere bearing several delicate bristles. Mandibles longer than head, uniformly brown, curved near the apices, devoid of teeth but with rows of dolichaster-bearing papillae along the basal two-thirds. Maxillae each reduced to a single blade fitting into the ventral surface of the mandible to form the suctorial tubes. Cardo and stipes discernible but maxillary palps absent. Labium reduced to a single median plate bearing a three-segmented labial palp on either side. Basal segment of palp large, middle segment short, cylindrical, terminal segment fusiform, tapering to an acute tip. An oval pit-shaped sense organ present on the dorsal surface, and six microscopic finger-like setae at the apex of the terminal segment.

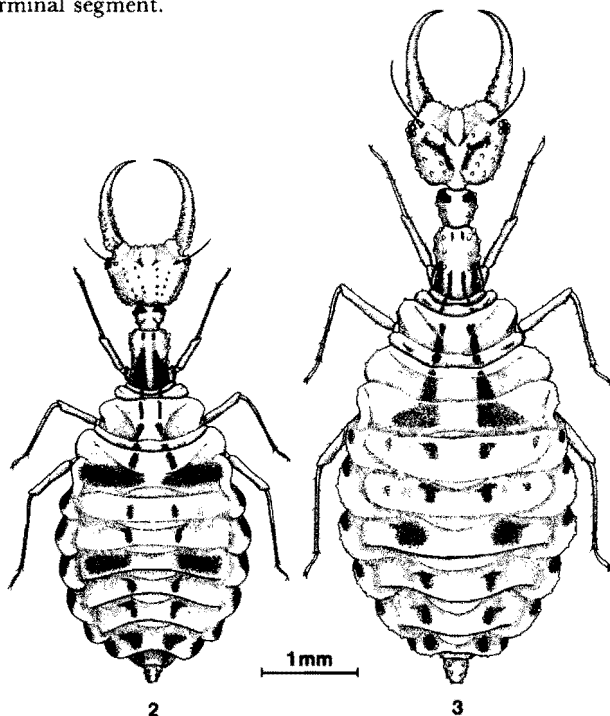


Fig. 2. Larva of *Concroce capensis* Tjeder.

Fig. 3. Larva of *Concroce walkeri* Tjeder.

Prothorax short, comprising three segments. Anterior segment very short, almost oval, bearing sensory setae at articulation with the head; diffusely brown, with two prominent brown marks on either side of pale dorsal midline at anterior margin of the segment. Middle segment longer, wider, divided into tergite and sternite, bearing the prothoracic legs. Two large dark brown marks cover most of this segment on either side of the pale dorsal midline. Anterior and middle segments of prothorax sclerotized. Posterior segment of prothorax short, unsclerotized, incorporated with the rest of the body and bearing the prothoracic spiracles. Cuticle of stellate conformation, with two pairs of brown marks on either side of the dorsal midline. Rows of dolichaster-bearing papillae occur on all three segments of the prothorax. Prothoracic coloration in second-instar larvae similar to third-instar, but pale in first-instar larvae. Mesothorax rectangular, divided by transverse fold, rusty brown anteriorly, pale buff posteriorly, overlain by several fuscous marks on either side of the midline. Metathorax similar to mesothorax but wider, with two large fuscous marks covering most of the posterior region on either side of the midline. Two narrow fuscous marks extend anteriorly from the metathorax and converge on the mesothorax. The thoracic markings are also discernible in second-instar larvae. Spiracles are situated dorsally on either side of the metathorax. Legs short, pale brown, paler at articulations, with dark marks on the coxae. Rows of setae occur along the legs, with sensory setae at articulations. Tarsi one-segmented, terminating in paired brown claws.

Abdomen ten-segmented, segments 1 to 7 all alike but progressively smaller, with lateral spiracles. Segment 8 conical, with well-developed dolichasters, and sensory setae at articulation with segment 7. Segments 9 and 10 very small, telescoped into segment 8, together forming the spinneret. Segment 3 with prominent fuscous marks on either side of the dorsal midline, similar to the marks on metathorax. The other abdominal segments with smaller irregularly shaped brown and fuscous marks on either side of the midline and dark marks on the pleurites. Spiracular openings lacking sieve-like coverings (Mansell 1976, fig. 5) or spiracular closing mechanism, but with setae in the trachea, just below the openings.

EGG (fig. 4A-D). Oval, about 0.67 mm long, with regularly arranged mushroom-shaped aeropyles on the chorion and a sponge-like structure over the micropyle at the cephalic end.

DISTRIBUTION (fig. 5). *Concroce capensis* has been recorded only from the mountainous areas of the south-western Cape Province, and is apparently endemic to the region.

REMARKS. Tjeder (1967) established the genus *Concroce* for three new species, *C. hessei*, *C. capensis* and *C. walkeri*, each of which he described from a single specimen. The type-species of the genus, *C. hessei*, was described from a female specimen and Tjeder (1967) stated in the description of *C. hessei* that it was possibly the female of *C. capensis* or *C. walkeri*. He elected to distinguish the three as separate species rather than make an incorrect association of the female with either of the males. The type-locality of *C. hessei* was Piketberg (32° 55' S 18° 45' E), that of *C. capensis* was Du Toitskloof (33° 40' S 19° 14' E) whilst *C. walkeri* was described from 'South Africa'. Collections have now been made at the two type-localities (Piketberg and Du Toitskloof), where male, female and larval specimens were obtained, and *C. walkeri* has been found at

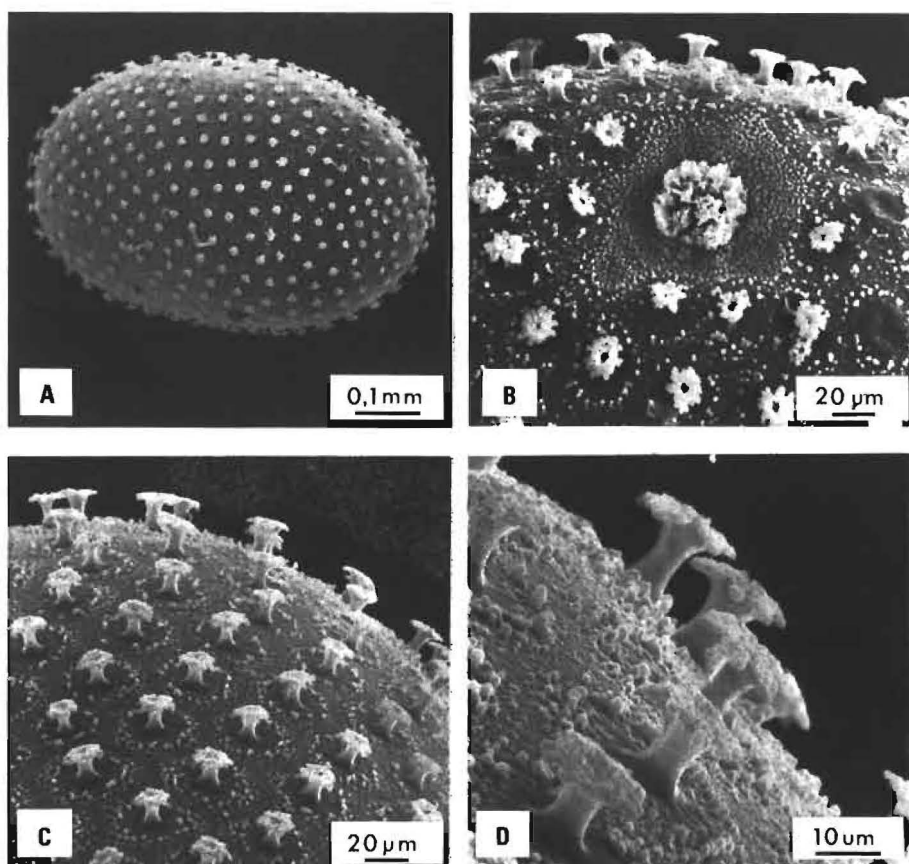


Fig. 4A-D. Egg of *Concroce capensis* Tjeder. A. Whole egg, lateral view. B. Sponge-like structure covering the micropyle. C. Aeropyles on chorion. D. Detailed structure of aeropyles.

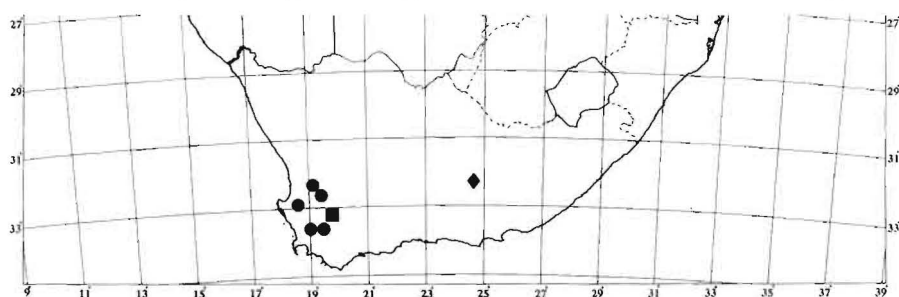


Fig. 5. The recorded distribution of *Concroce* species in southern Africa. *Concroce capensis* Tjeder (closed circles); *C. walkeri* Tjeder (diamond); *C. parva* spec. nov. (square).

Graaff-Reinet. These specimens were compared with each other, and with the type-specimens of *C. hessei*, *C. capensis* and *C. walkeri*. From these comparisons, I have concluded that *C. hessei* and *C. capensis* are conspecific, confirming the suspicion expressed by Tjeder (1967).

Concroce hessei was described before *C. capensis* in the same publication (Tjeder, 1967), but in terms of article 24 (a) of the International Code of Zoological Nomenclature page precedence does not confer priority, for this is to be determined by the action of the first reviser. *Concroce capensis* is designated as the senior synonym because the holotype is a male, which will facilitate more accurate identification of the species. Consequently *C. hessei* is relegated to synonymy with *C. capensis*.

MATERIAL EXAMINED. Holotype ♂ of *C. capensis* (National Museum, Bulawayo, Zimbabwe), holotype ♀ of *C. hessei* (South African Museum, Cape Town), 35 adults and 51 larvae. SOUTH AFRICA: Cape Province; Kromrivier Farm, Cedarberg (32° 32' S 19° 18' E), 1 ♂ 2 ♀ 7 larvae, 5.i.1975; Goudini Spa, Worcester (33° 40' S 19° 16' E), 4 ♂ 6 ♀ 11 larvae, 3.ii.1977; Piketberg (32° 55' S 18° 45' E), 6 ♂ 10 ♀ 33 larvae, 27.vii.1977; all reared from larvae; Algeria Forestry Station, Cedarberg (32° 22' S 19° 03' E), 2 ♂ 2 ♀, 8.i.1978; Bains Kloof (33° 33' S 19° 09' E), 2 ♂, 9.i.1978. All collected by M. W. Mansell.

Concroce walkeri Tjeder, figs 3, 5, 6, 7

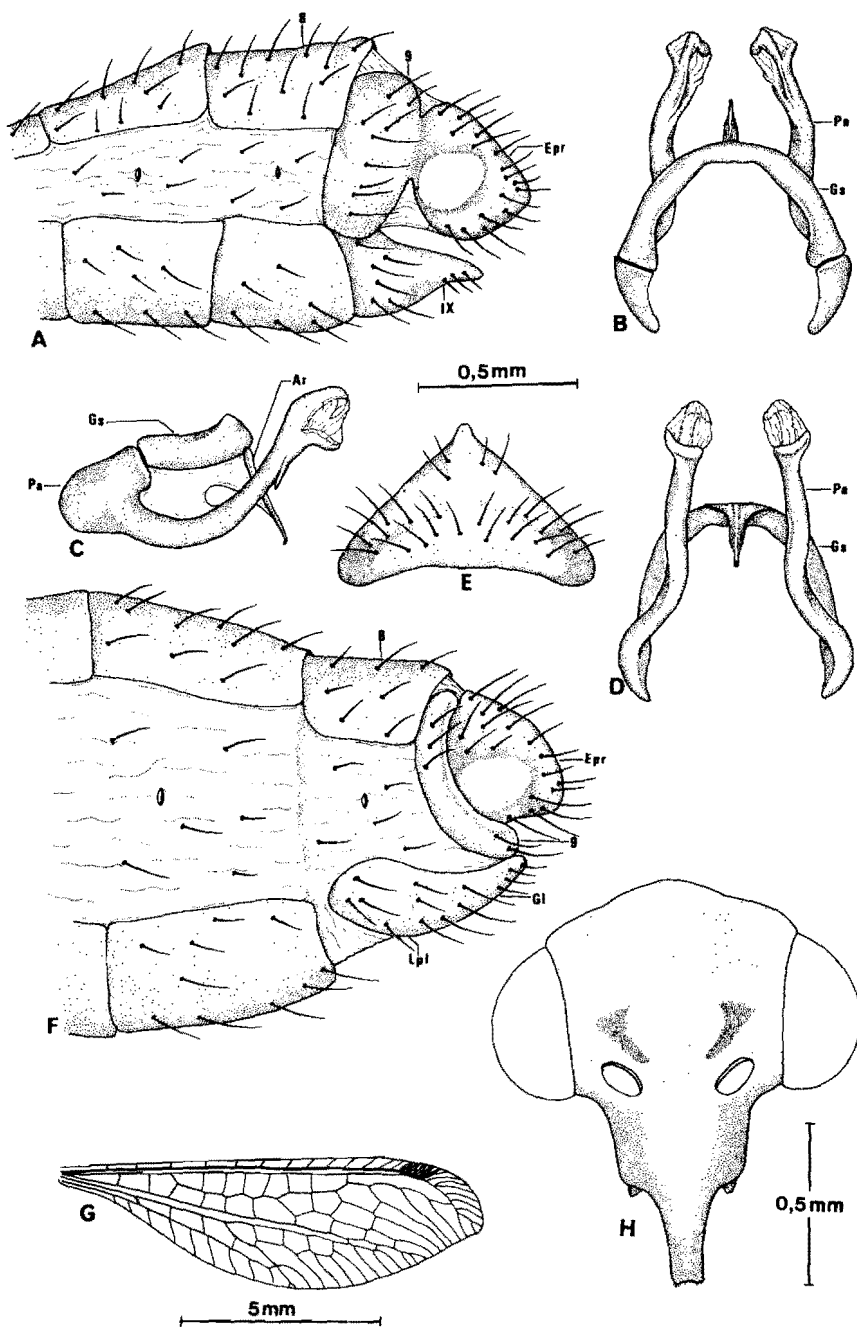
Nemoptera setacea Klug, Walker, 1853: 474 (misidentified).

Concroce walkeri Tjeder, 1967: 343, Hölzel, 1975: 93; Mansell, 1977: 202.

ADULTS. Sexes alike, characterized by a very short rostrum. Mean measurements in mm for 9 specimens, ranges in brackets: length of body 7.1 (6.8–7.4); length of forewing 11.0 (10.5–11.5); length of hindwing 29.3 (24.0–33.0); length of antenna 2.2 (2.0–2.4); length of rostrum 0.64 (0.60–0.72).

Head (fig. 6h) yellow, with two distinct marks above the antennal bases and diffuse brown markings on the vertex. Rostrum shorter than interorbital space measured across the frons. Mouthparts black, with palps pale at articulations and apices, clypeus yellow, genae and labrum black. Antennae short, black, with pale annulations on proximal half of each flagellomere, with apices of antennae black and slightly thickened. Scape uniformly pale yellow, pedicel yellow, with brown annulation distally.

Prothorax yellow, with two brown spots and short black setae on anterior margin and two brown marks posteriorly on either side of the midline. Lateral margins of prothorax pale, sternites uniformly black, with the black extending posteriorly as a broad stripe along the meso- and metapleurites above the coxae. Pterothorax yellow, with diffuse brown marks above the wing bases. Pleurites pale below the wing bases above the black stripe, sternites pale. Legs pale yellow, with black annulations at proximal ends of tibiae. Tarsi five-segmented, with proximal tarsomere longer than the combined length of the other four. Paired tarsal claws pale brown, legs densely covered with short black setae. Forewings (fig. 6c) with distinct pterostigma formed by incrassate costal veins, brown proximally, yellow distally. Two crossveins usually present between R and M before Rs and 6 or 7 radial crossveins between R and Rs. Vein 1A fused with Cu2 for almost its entire length. Hindwings narrow, without



dilations, pale yellowish brown proximally, whiter towards the extremities and densely clothed in delicate pale setae. Bullae absent from wings of males.

Abdomen pale yellow, with diffuse brown marks, not conforming to any consistent pattern, on the tergites. Abdominal pleurites brown, sternites pale. Sparsely arranged short black setae are present on the abdomen. Male (fig. 6A–E) with tergite 9 divided dorsally, each half fused posteriorly with the respective ectoproct. Ventral margins of tergite 9 rounded, barely overlapping sternite 9, which is triangular, with a short apex. Gonarcus arcuate, stout, with long slender arcessus. Entoprocesses absent but with a pale laminar extension which is difficult to discern. Parameres strongly curved, about 0.94 mm long, with flattened proximal regions orientated in line with the gonarcus, proximal projections lacking. Distal lobes of parameres symmetrical, each consisting of an apical projection curved forwards and then downwards, with a thumb-like projection posterior to this, all sheathed in a membrane. A spine-like projection extends anteriorly along the ventral surface from each paramere lobe (fig. 6c). Gonosetae, spinellae and pleuritocavae absent. Female (fig. 6F) with tergite 9 divided dorsally, the two halves curving downwards and posteriorly, becoming closely adpressed to the dorsal margin of the gonapophyses laterales. Lateral plates of sternite 8 fused with the gonapophyses laterales, which are joined to each other by a convoluted expansible membrane. Genital opening situated between the apices of the gonapophyses laterales. Ectoproct with posterior margin rounded, bearing long black setae. Callus cerci in males and females prominent, glossy white, devoid of setae.

LARVA (fig. 3, Table 2). Characterized by short prothorax, quadrate head and light brown body. Head quadrate, wider than long, squarish in the occipital region, with prominent dolichaster-bearing papillae on the surface. Heads of second and third-instar larvae brown, with darker brown marks on clypeal region and two lighter brown marks extending posteriorly from the tentorial pits on to the occipital region. Head of first instar larva pale yellow, with faint brown marks on the clypeal region. Well defined Y-shaped epicranial sutures present on heads of first and second-instar larvae. Eyes each comprising seven stemmata, with prominent dolichaster-bearing papillae interspersed between the stemmata. Antennae each consisting of a stout brown pedicel supporting a delicate nine-segmented pale yellow flagellum. Proximal and distal flagellomeres long, intermediate seven short, with three delicate apical bristles on distal flagellomere. Mandibles longer than head, uniformly pale brown, devoid of teeth, curved near the apices, with dolichasters along the basal half. Maxillae each reduced to a single blade fitting into the ventral surface of the mandible to form the suctional tubes, Cardo and stipes discernible but maxillary palps absent. Labium reduced to a single median plate bearing a three-segmented labial palp on either side. Basal segment of palp large, cylindrical, middle segment narrower, dilated apically, terminal segment fusiform, with an oval pit-shaped sense organ on the dorsal surface.

Prothorax short, comprising three segments. Anterior segment short, dilated anteriorly, pale yellowish-brown, with two brown marks on dilated area and sensory

Fig. 6A–H. *Concroce walkeri* Tjeder. A. Apex of abdomen ♂. B. Gonarcus and parameres, dorsal view. C. Gonarcus and parameres, lateral view. D. Gonarcus and parameres, ventral view. E. Sternite 9. F. Apex of abdomen ♀. G. Wing. H. Head, frontal view. Ar – arcessus; Epr – ectoproct; Gl – gonapophyses laterales; Gs – gonarcus; Lpl – lateral plate of sternite 8; Pa – paramere; IX – sternite 9; 8, 9 – tergites.

TABLE 2. Mean measurements (mm) for *C. walkeri* larvae (ranges are given below the means).

	1st Instar	2nd Instar	3rd Instar
Number of larvae measured	2	13	22
Head width	0,36 0,36	0,59 0,56-0,64	1,02 0,92-1,08
Head length	0,32 0,32	0,50 0,48-0,52	0,81 0,72-0,88
Mandible length	0,50 0,48-0,52	0,69 0,68-0,76	1,16 1,04-1,24
Prothoracic length	0,38 0,36-0,40	0,71 0,68-0,76	1,22 1,12-1,32
Body width*	0,72 0,68-0,76	1,09 0,80-1,56	2,36 1,60-3,08
Body length*	2,34 2,20-2,48	3,61 2,88-4,44	6,61 5,36-7,84

*Variable, depending upon feeding and state of maturity within instar.

setae at articulation with head. Middle segment of prothorax longer, wider, divided into tergite and sternite and bearing prothoracic legs. Tergite light brown, with two brown marks on anterior margin and dark marks above the coxal bases. Anterior and middle segments of prothorax sclerotized, with sparse rows of dolichasters. Posterior segment of prothorax short, broad, divided by transverse fold and incorporated with the rest of the body. Cuticle of stellate conformation, brown, with two pairs of dark brown marks flanking the midline, and with minute lateral spiracles. Prothoracic markings similar in second-instar larvae but paler in first. Mesothorax rectangular, with transverse fold, pale brown, with two dark brown marks on either side of the dorsal midline and on the lateral surfaces. Metathorax similar to mesothorax but wider, with a broad medially interrupted dark brown band on the posterior region behind the prominent metathoracic spiracles. Legs pale brown, with dark brown marks on the coxae and paler brown marks at proximal ends of the tibiae. Tarsi one-segmented, terminating in paired claws. Longitudinal rows of dolichasters occur on the legs, with sensory setae at the articulations.

Abdomen ten-segmented, segments 1 to 6 all alike but progressively smaller, with lateral spiracles. Segment 7 short, broad, with lateral spiracles and a pair of sensory plates bearing dolichasters and rigid needle-like setae at the ventral articulation with segment 8. Segment 8 conical, with prominent dolichasters. Segments 9 and 10 reduced, telescoped into segment 8, together forming the spinneret. Abdominal cuticle of stellate conformation, with sparsely arranged fusiform dolichasters. Abdomen pale brown, with pairs of prominent brown marks flanking the dorsal midline on segments 3 and 6. Other segments with small brown marks dorsally, and larger brown marks laterally. Spiracular openings lack sieve-like coverings or spiracular closing mechanism, but have setae in the trachea just below the openings.

EGG (fig. 7A-F). Oval, about 0.77 mm long. Surface of chorion covered with mushroom-shaped acropyles, the base of each acropyle stout, surrounded by a ring of wax-like globules. A sponge-like structure is situated over the micropyle at the cephalic end of the egg.

DISTRIBUTION (fig. 5). *Concroce walkeri* has been recorded from only one locality in the mountains near Graaff Reinet (32° 15' S 24° 32' E).

REMARKS. *Concroce walkeri* was described by Tjeder (1967) from a single specimen recorded by Walker (1853) as *Nemoptera setacea* Klug, from 'South Africa'. The specimen, which is in the British Museum (Natural History), is now in poor condition, and all that was available to Tjeder was a microscope-slide preparation of the genitalia (Tjeder 1967). Specimens reared from larvae recently collected at Graaff Reinet were dissected, and the male genitalia were compared with descriptions given by Tjeder (1967) and with the holotype of *C. walkeri*. These comparisons indicate that the species from Graaff Reinet is *C. walkeri*, and a redescription of the adult is given above, based on this new material.

The adults of *C. walkeri* differ from *C. capensis* in body colour, by having a short rostrum and antennae and symmetrical parameres. The female of *C. walkeri* has the lateral plates of sternite 8 fused with the gonapophyses laterales, whereas in *C. capensis* they are separated.

The larva of *C. walkeri* is larger than that of *C. capensis* (see Tables 1 & 2) and is brown, as opposed to the black coloration of *C. capensis*. The eggs also differ in that the mushroom-shaped acropyles are shorter and stouter in *C. walkeri* than in *C. capensis*.

MATERIAL EXAMINED. Holotype ♂ of *C. walkeri* (British Museum (Natural History), London), 9 adults and 37 larvae. SOUTH AFRICA: Cape Province; Graaff Reinet (32° 15' S 24° 32' E), 3 ♂ 6 ♀ 37 larvae, 16.iv.1978, M. W. Mansell & V. C. Moran. Adults reared from larvae, larval collection date given.

Concroce parva spec. nov. figs 5, 8

Similar to *C. walkeri* but smaller. Characterized by its yellow colour, short rostrum (but longer than the interorbital distance across the vertex) and short antennae. Sexes alike. Mean measurements in mm for 22 specimens, ranges in brackets: length of body 6.0 (5.4-6.8); length of forewing 9.6 (8.5-10.5); length of hindwing 26.0 (23.0-29.0); length of antennae 2.0 (1.8-2.2); length of rostrum 0.75 (0.72-0.84). Holotype ♂ 6.4; 9.5; 29.0; 2.1; 0.76.

Head (fig. 8j) uniformly yellow, with two pairs of fuscous marks, one well-defined pair immediately above the antennal bases and a paler pair on the vertex. Mouthparts yellowish-brown, clypeus short, broad, yellow, genae and labrum black. Rostrum very short, less than twice the interorbital distance. Antennae short, scape and pedicel yellow, flagellum yellowish brown, with broad brown annulations on each flagellomere but apical flagellomeres uniformly brown.

Prothorax yellow, with two diffuse brown marks, diverging posteriorly, on either side of the midline. Stiff black setae are present on the prothorax, particularly along the anterior margin. Pterothorax yellow, with faint brown marks above the wing bases. A broad brown stripe extends from the prothorax across the pterothorax below

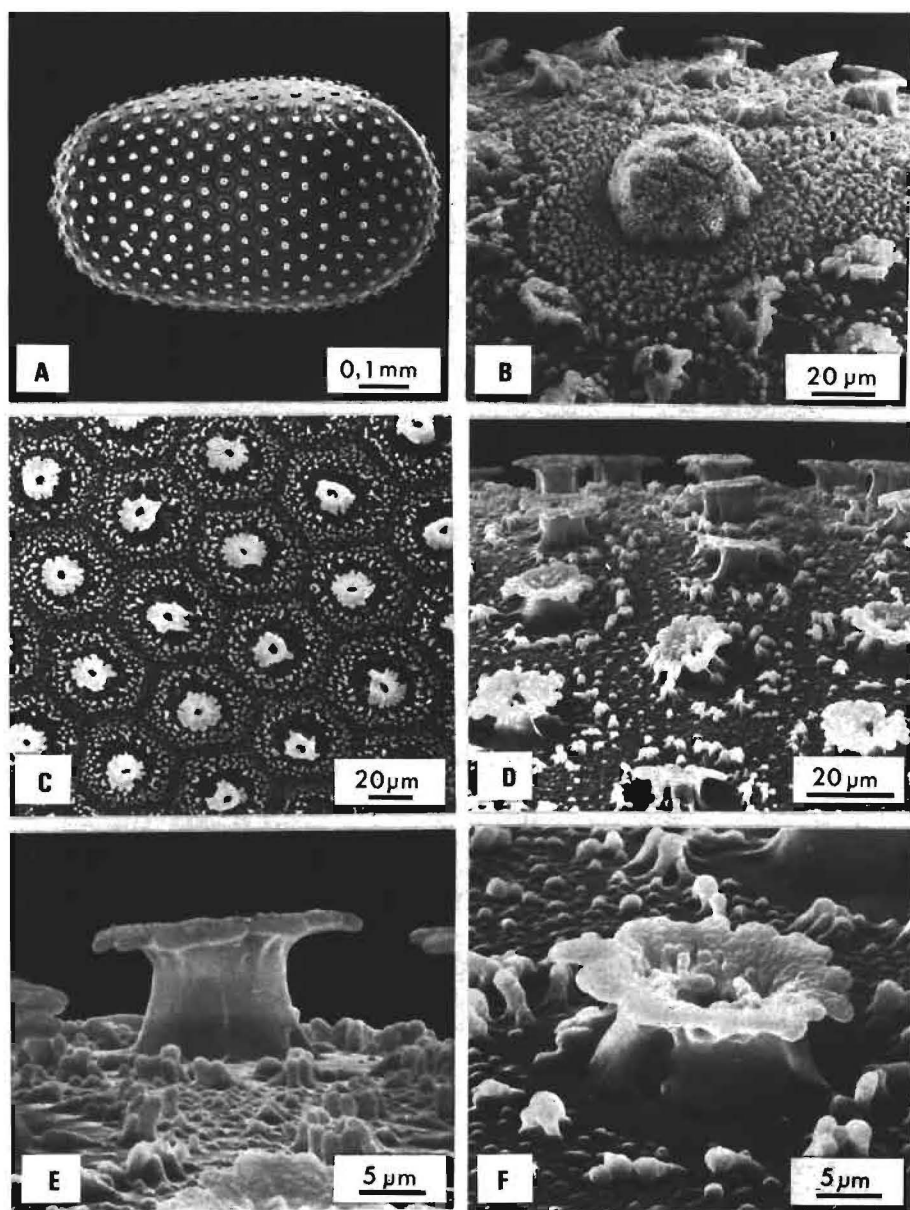


Fig. 7A-F. Egg of *Concroce walkeri* Tjeder. A. Whole egg, lateral view. B. Sponge-like structure covering the micropyle. C. Aeropyles on chorion. D, E, F. Detailed structure of aeropyles.

the wings, and along the abdominal pleurites. Legs yellowish brown, densely covered with short black setae. Tarsi five-segmented, with proximal tarsomere longer than combined length of the distal four, paired tarsal claws pale brown. Wings with distinct yellow pterostigma formed by incassate costal crossveins. Wings veins dark brown bearing black setae. Two crossveins present between R and M before Rs, and 5 or 6 (rarely 4 or 7) radial crossveins between R and Rs before hypostigmatic cell; 10 to 14 costal crossveins in costal area before pterostigma. Vein 1A fused with Cu2 for almost its entire length. Hindwings short, relative to other species, slender, brown proximally, pale along most of distal portion. Bullae absent from wings of males.

Abdomen yellow, with diffuse brown marks on tergites and a distinct black line along the pleurites, extending on to the sternites. Pleuritocavae absent. Male (fig. 8A-G) with tergite 9 divided dorsally, the two halves fused with the respective ectoprocts. Sternite 9 with elongated apex terminating in five microscopic finger-like projections* (fig. 8G). Gonarcus stout, arcuate, with well-developed arcessus and two flange-like extensions. Parameres very stout, curved, with distal lobes asymmetrical, the left lobe larger than the right and with an anteriorly directed ventral spine. Left paramere about 1.08 mm long, with distal lobe comprising two chitinous extensions supporting a large membranous sac; one chitinous extension is thumb-like, projecting ventrally, the other longer, projecting upwards and then curved downwards and inwards. A semicircular arrangement of small setae occurs on the inner surface of the membranous sac opposite the distal lobe of the right paramere. Right paramere (fig. 8D) broad, with crook-shaped distal lobe sheathed in a small membranous sac. The distal lobes of the parameres closely adpressed to one another but not fused. Proximal projections of parameres absent, and gonosaccus lacks spinellae and gonosetae. Female (fig. 8H) with tergite 9 divided dorsally, curved downwards and posteriorly, closely adpressed to the anterior margins of the ectoprocts and dorsal margins of the gonapophyses laterales. Genital opening situated between the apices of the gonapophyses laterales, which are joined to one another by a convoluted expansible membrane. Lateral plates of sternite 8 bearing setae and not fused with gonapophyses laterales. Ectoprocts almost quadrate, with distinct callus cerci.

LARVA (Table 3). Very similar to that of *C. capensis* (see fig. 2) but distinguished by two features; (i) larvae of *C. parva* are slightly larger than *C. capensis* (Tables 1 & 3), (ii) in *C. parva* the prothorax is the same length as, or slightly longer, than the mandibles, but in *C. capensis* the prothorax is shorter than the mandibles.

EGG. Morphologically identical to that of *C. capensis* (fig. 4 A-D).

DISTRIBUTION (fig. 5). *Concroce parva* has been recorded only from one locality in the Hex River Valley (33° 29' S 19° 40' E), and is probably endemic to the south-western Cape Province.

REMARKS. The adults of *C. parva* are the smallest of the known southern African Crocinae. They resemble *C. walkeri* in body coloration, wing venation and short rostrum and antennae. The two species differ in that *C. parva* is smaller and has a longer rostrum than *C. walkeri*. In *C. parva* the parameres are asymmetrical, whereas in *C. walkeri* they are symmetrical, and the shape of sternite 9 is also different: in *C. parva* it has a long projecting apex terminating in five delicate finger-like projections, but in *C. walkeri* the apex projects only slightly and is round.

TABLE 3. Mean measurements (mm) for *C. parva* larvae (ranges are given below the means).

	1st Instar	2nd Instar	3rd Instar
Number of larvae measured	12	18	29
Head with	0,36 0,36	0,55 0,52-0,60	0,92 0,88-1,00
Head length	0,32 0,32	0,47 0,44-0,52	0,72 0,68-0,80
Mandible length	0,46 0,36-0,48	0,68 0,64-0,72	1,09 1,04-1,20
Prothoracic length	0,38 0,36-0,40	0,67 0,64-0,72	1,14 1,04-1,20
Body width*	0,76 0,64-0,80	1,03 0,88-1,40	2,04 1,44-2,40
Body length*	2,43 2,12-2,76	3,52 3,16-4,20	6,25 5,12-6,80

*Variable, depending upon feeding and state of maturity in instar.

The larva of *C. parva* is much smaller than that of *C. walkeri* and has black marks on the body as opposed to the brown body coloration of *C. walkeri*.

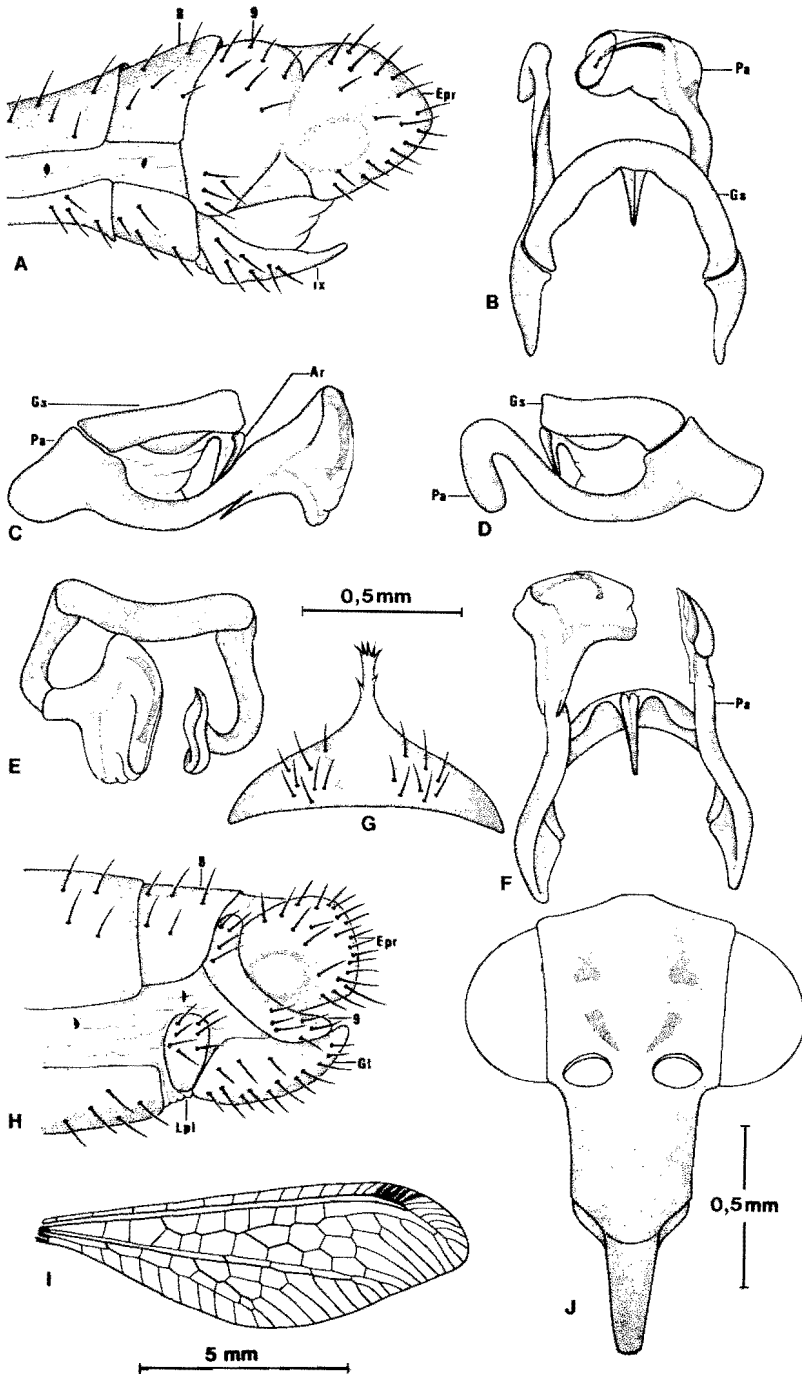
The adults of *C. parva* are distinguished from *C. capensis* by being smaller, with shorter rostrum and antennae and a yellow body; *C. capensis* has a darkly coloured body. Although the parameres of both species are asymmetrical, the male genitalia are clearly distinguishable.

The larvae and eggs of *C. parva* are almost identical to those of *C. capensis*, the larvae being distinguished by features outlined above whilst the eggs of the two species are apparently indistinguishable.

The species of *Concroce* constitute a homogeneous and distinctive taxon which is apparently endemic to the mountainous areas of the Cape Province.

MATERIAL EXAMINED. Adults, ♂ holotype, 7 ♂ 14 ♀ paratypes and 59 larvae. SOUTH AFRICA: Cape Province; Hex River Valley near De Doorns (33° 29' S 19° 40' E), 2 ♂ 2 ♀ paratypes 7 larvae, 9.i.1975, ♂ holotype, 5 ♂ 12 ♀ paratypes 36 larvae, 26.vii.1977, 16 larvae reared from eggs laid by females in the laboratory. All adults reared from larvae collected by M. W. Mansell, larval collection dates given above. Holotype ♂, 4 ♂ and 11 ♀ paratypes deposited in National Collection of Insects, Plant Protection Research Institute, Pretoria (holotype No. 899). Paratypes: British Museum (Nat. Hist.), London, England; Transvaal Museum, Pretoria; Albany Museum, Grahamstown.

Fig. 8A-J. *Concroce parva* spec. nov. A. Apex of abdomen ♂. B. Gonarcus and parameres, dorsal view. C. Gonarcus and left paramere, lateral view. D. Gonarcus and right paramere, lateral view. E. Distal lobes of parameres, posterior view. F. Gonarcus and parameres, ventral view. G. Sternite 9. H. Apex of abdomen ♀. I. Wing. J. Head, frontal view. Ar - arcessus; Epr - ectoproct; Gl - gonapophyses laterales; Gs - gonarcus; Lpl - lateral plate of sternite 8; Pa - paramere; IX - sternite 9; 8, 9 - tergites.



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